UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

MAR 17 2010

Ref: 8EPR

Martha S. Chieply, Regulatory Chief
Omaha District, U.S. Army Corps of Engineers
215 North 17th Street
Omaha, NE 68102

Re: Moffat Collection System Project, Draft Environmental Impact Statement, October 2009, CEQ# 20090365 and Public Notice for 404 Permit Application NWO-2002-80762-DEN

Dear Ms. Chieply:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4321, et.seq., Section 309 of the Clean Air Act (Section 309), 42 U.S.C. Section 7609, and Section 404 of the Clean Water Act (Section 404), 33 U.S.C. 1344, the U.S. Environmental Protection Agency, Region 8 (EPA) has completed its review and evaluation of the Draft Environmental Impact Statement (EIS) and permit application prepared by the U.S. Army Corps of Engineers (Corps) for the Denver Water Moffat Collection System Project. These comments are being sent consistent with Part IV(3)(a) of the Clean Water Act (CWA) Section 404(q) Memorandum of Agreement (MOA) between the EPA and the Department of the Army.

The Moffat Collection System Project is a regional water supply project designed to provide 18,000 acre-feet (AF) per year of new, firm yield to the Moffat Treatment Plant and raw water customers upstream of the Moffat Treatment Plant pursuant to the Board of Water Commissioners' commitments. The 18,000 AF partially addresses an estimated shortfall of 34,000 AF per year in water supply that is projected for 2016 to 2030. The remaining 16,000 AF per year of estimated shortfall will be addressed through conservation efforts.

The Draft EIS evaluates five action alternatives, plus the No Action Alternative. These alternatives include: Alternative 1a, the Proposed Action – Gross Reservoir Expansion (Additional 72,000 AF); Alternative 1c – Gross Reservoir Expansion (Additional 40,700 AF) and a new reservoir in Leyden Gulch (31,300 AF); Alternative 8a – Gross Reservoir Expansion (Additional 52,000 AF) and use of reusable return flows stored in gravel pits along the South Platte River (5,000 AF); Alternative 10a – Gross Reservoir Expansion (Additional 52,000 AF) and use of reusable return flows to recharge the Denver Basin Aquifer (20,000 AF); and Alternative 13a – Gross Reservoir Expansion (Additional 60,000 AF) and transfer of agricultural water rights for storage in gravel pits along the South Platte River (3,625 AF); and the No Action Alternative.

EPA appreciates the time and effort of the Corps in addressing some of our comments on the Preliminary Draft EIS. For example, EPA is pleased with the expanded hydrologic analysis that includes the Fraser River tributaries affected by diversion. This expanded analysis provides much greater detail as to the potential changes in operation in the Moffat Collection System. However, many impacts and analyses identified as concerns in our original review and evaluation still remain.

EPA's primary concerns are that the Draft EIS does not include a sufficient analysis of water quality and aquatic resource impacts due to the proposed project, and does not adequately identify the mitigation of those impacts. Once these analyses are completed, the results are likely to show that the project has the potential to cause adverse impacts to impaired waterbodies and special aquatic sites. In addition, the Draft EIS does not fully address compliance with the CWA Section 404(b)(1) Guidelines (Guidelines). Further concerns are described in the enclosed detailed comments.

The Draft EIS minimizes potential impacts of the action alternatives as a result of analysis against multiple baseline conditions. The Draft EIS presents as baseline both "current" and "existing" conditions. "Current" conditions are described as the affected environment in 2006, and "existing" conditions include significant diversions that are currently planned to occur through actions by the applicant between now and 2016. The action alternatives are compared against the existing conditions and include those impacts that are expected to occur after 2016. In using two different baselines, the current (2006) and existing (2016), the net effect for all the scenarios maximizes the apparent impacts prior to 2016 and minimizes the apparent impacts of the action alternatives. This analysis does not provide an accurate understanding of the breadth of impacts that are expected to occur as a result of each alternative. Water quality and aquatic resources data used in this evaluation should best reflect current conditions, current impairment status, and the most recent hydrologic conditions. EPA recommends that the Corps either 1) use the current (2006) conditions as a baseline for the impacts analysis, or 2) provide additional analyses that adequately quantify the changes in aquatic resources and water quality parameters between 2006 and 2016 in order to thoroughly disclose the impacts of the proposed action.

Water Quality Analysis

The Draft EIS does not sufficiently address the project's potential to contribute to adverse water quality impacts on the Western Slope, including: temperature impairments, dissolved oxygen impairments, and nutrient impairments. The Draft EIS refers to the impairments identified in the 2008 Integrated Report CWA Section 303(d) list. A draft 2010 303(d) list is available from the Colorado Department of Public Health and Environment (CDPHE), and this updated list provides newly identified impairments for waterbodies affected by this project. A table is provided in the enclosed detailed comments that includes the draft 2010 303(d) listings for the watersheds of interest. Of greatest concern are the newly identified temperature impairments in Ranch Creek, the Fraser River, and the Upper Colorado segments below the confluence with the Fraser. Water withdrawals in these areas associated with the proposed project, along with past diversion actions, will likely exacerbate these temperature impairments, and this impact should be disclosed in the Draft EIS. Because the Draft EIS does not include the

most recent relevant information on the updated 2010 Colorado impaired water bodies list, the result may be an underestimation of anticipated impacts.

The Draft EIS does not include a pollutant loading analysis and does not determine changes to the assimilative capacities as a result of additional water withdrawals to the waterbodies affected by this project as outlined in the detailed comments of this letter. As a result, the Draft EIS does not contain sufficient information to determine whether currently permitted discharges will cause or contribute to a violation of State water quality standards in the future. It is clear that the Fraser River, Ranch Creek and the Colorado River currently are considered impaired for temperature. The proposed project will contribute to these water quality impairments. Additionally, downstream waterbodies that receive Fraser River water diversions are presently showing the effects of nutrient pollution. The actions proposed for the Fraser River will increase the relative nutrient load in the river and contribute to water quality degradation in the Fraser and Williams Fork Rivers and their tributaries, the Colorado River and the Blue River. The impacts analysis should disclose and address this issue and provide revised conclusions regarding the water quality necessary to support aquatic life classifications (i.e., dissolved oxygen, temperature, nutrients).

Aquatic Resources

The Draft EIS does not sufficiently analyze the direct, indirect (secondary) and cumulative impacts to aquatic life, functions and values and aquatic ecosystem diversity, productivity and stability reasonably associated with the proposed discharge, as is explicitly required under the Guidelines (see 40 CFR §§ 230.10(c), 230.11 (g) and (h)). The Draft EIS and Aquatic Resources Technical Report do not contain an analysis of impacts to aquatic resources of South Boulder Creek and other Gross Reservoir tributaries from reservoir filling. The proposed action will result in permanent impacts to 8,180 feet of perennial waters, including South Boulder Creek, Forsyth Gulch, Winiger Gulch Tributary, Winiger Gulch and an unnamed southern tributary (Draft EIS p. 4-253). In the Riparian and Wetland Areas section of Chapter 4, the Draft EIS states that this is "a major impact," yet the Draft EIS does not address any impacts on instream habitat and associated aquatic communities. This is a significant gap in the analysis of impacts. In order to adequately evaluate the appropriateness of alternatives and mitigation, and determine the Least Environmentally Damaging Practicable Alternative (LEDPA) under CWA Section 404, information on these impacts must be characterized and disclosed in the EIS and addressed in the surface water and aquatic resources sections; appropriate avoidance, minimization and mitigation must be proposed and presented in the document.

The Draft EIS does not provide a sufficient analysis of ecological impacts anticipated to occur under each alternative. In order to characterize the magnitude of direct, indirect and cumulative impacts, the Draft EIS uses five categories of impact intensity (none, negligible, minor, moderate and major), which are inconsistently applied throughout the documents and not sufficiently defined. This lack of consistency and failure to provide clear definitions for the various levels of impacts undermines the credibility of the impacts analysis. The Draft EIS states that "An assessment of impact thresholds has been provided for all resources except the surface water (Section 4.1 of the EIS) since the degree of impact is specific to each flow-related

resource" (Appendix K-33), yet there is no information in the Draft EIS that describes the impact thresholds for each resource. With the information provided, we are unable to understand the scientific basis for impact categories or the magnitude of actual impacts. The current description provides no information as to how these impact categories relate to environmental or biological condition or whether uncertainty analyses, sensitivity analyses or confidence limits were used to define these thresholds for impact categories. EPA requests that the Corps define the impact categories such that they are 1) based upon the actual magnitude of impact, 2) directly related to environmental or biological condition and 3) scientifically rigorous (e.g., "minor" impacts reflect a change in % Ephemeroptera, Plecoptera and Trichoptera (EPT) taxa of XX% under the proposed action compared with existing conditions).

The baseline condition for the project identified in the Draft EIS lacks consideration of how past diversions have affected the aquatic resources to date. In addition, the Draft EIS underestimates the current extent of diversion impacts on aquatic resources and water quality by presenting 2006 data without the broader context of cumulative flow diversions in the system. An assessment of impacts in the context of total diversion magnitude, incorporating past cumulative diversions, is necessary to accurately characterize the current and existing baseline conditions, to characterize any potential non-linear changes in aquatic resources, and to develop a plan for appropriate mitigation. Additional information on past diversions would substantially improve the impacts analysis and provide insights on the current baseline that the Draft EIS analysis lacks.

The cumulative impacts analysis does not sufficiently address potentially significant impacts to aquatic resources in the Fraser and Williams Fork Rivers and their tributaries, the Colorado River, the Blue River, and North Fork South Platte River related to the cumulative effect of flow management. Potential impacts to aquatic ecosystems, including perennial streams, associated wetlands, and aquatic habitats from present and past flow management are not sufficiently evaluated and disclosed in the analysis. Without a more robust impact analysis that includes an accurate characterization of water quality, baseline and existing conditions and a scientifically based characterization of impact intensity, the cumulative impacts section of the Draft EIS is insufficient.

In order to comply with the Guidelines, a project must not cause or contribute to significant degradation of aquatic ecosystem diversity, productivity and stability, either individually or cumulatively. In the context of the Guidelines, significance does not represent a statistical standard, but reflects changes that are more than trivial. The Draft EIS states that the project's direct and indirect impacts to stream morphology, water quality and aquatic life are minor, and that cumulative effects are similar to direct effects. However, research in the Fraser River Basin and Colorado River has shown that similar past actions of diversion and alteration of flow regimes have led to significant changes in water quality and aquatic life. When the impacts of this project are analyzed in combination with past and reasonably foreseeable actions, the degradation to the aquatic ecosystems in the Williams Fork, Fraser and Colorado River Basins may reach a level that is likely to be significant, and compensatory mitigation is necessary to reduce impacts below a level of significance.

Mitigation

EPA is concerned that the mitigation as currently proposed in Appendix M of the Draft EIS does not compensate for the likely adverse impacts associated with this project per 40 CFR § 230.10(d). The Draft EIS states that direct impacts to waters of the U.S. include permanent loss of 8,356 linear feet of perennial streams and 1.95 acres of wetlands. The current proposed mitigation for the perennial stream impacts is an additional 5,000 AF environmental pool at Gross Reservoir, which would provide enhancement flows to 17 miles of South Boulder Creek downstream of the reservoir. This proposal would provide great benefit for the fishery in South Boulder Creek. However, because none of the direct impacts to the aquatic resources in the tributaries of Gross Reservoir were disclosed in the Draft EIS, EPA is unable to determine whether the proposed enhancement alone is sufficient to offset the major impacts associated with inundating riffle and pool complexes of South Boulder Creek, Forsythe Gulch, Winiger Gulch and its tributary, and the unnamed southern tributary to Gross Reservoir. In the event that the proposed mitigation is insufficient to offset the permanent direct impacts of an enlarged Gross Reservoir, additional mitigation and adaptive management options must be required as part of the final authorized project. Additional mitigation options are discussed in the detailed comments section of this letter.

In accordance with the Guidelines, any project that causes or contributes to significant degradation, even if the contributions are 'minor' as stated in the Draft EIS, requires compensatory mitigation in order to reduce those impacts below a level of significance. There are available mitigation opportunities that the Corps should consider to offset the significance of the impacts and minimize the project's contribution to significant degradation in the Fraser, Williams Fork and Colorado River Basins. These mitigation options are described in our detailed comments.

In general, a mitigation plan for this project should include a monitoring and adaptive management plan for impacts to water quality, groundwater, stream morphology and aquatic life so that if impacts greater than those discussed in the Draft EIS are found, mitigation measures can be implemented. Details of the mitigation plan should be disclosed and included in the Final EIS and Record of Decision to satisfy both NEPA and CWA Section 404 permit requirements.

Section 404 Compliance Determination

EPA is providing comments on the public notice for the District's CWA Section 404 permit application for this project, which the Corps circulated for public review concurrently with the Draft EIS. The Corps intends for the Draft EIS to address compliance with the Section 404(b)(1) Guidelines, 40 CFR Part 230. The Draft EIS has not provided sufficient information to determine compliance with the Guidelines in accordance with 40 CFR § 230.10 due to: 1) inadequate analysis regarding the availability of less environmentally damaging practicable alternatives (230.10(a)), 2) inadequate information and analysis regarding potential violations of state water quality standards (230.10(b)), 3) inadequate information and analysis regarding the potential for the proposed action to cause or contribute to significant degradation of waters of the

U.S. (230.10(c)), and 4) insufficient information to determine adequate mitigation, and the mitigation proposed is not sufficient to reduce impacts to aquatic resources below a level of significance (230.10(d)). Additional analyses are necessary before the Corps proceeds with the decision on the CWA Section 404 permit.

In addition, the proposed action may result in substantial and unacceptable impacts to the Colorado River and Fraser River, which EPA has determined to be aquatic resources of national importance (ARNIs), pursuant to CWA Section 404(q) and Part IV(3)(a) of the 1992 Memorandum of Agreement (MOA) between EPA and the Corps regarding Section 404(q) of the Clean Water Act. EPA requests that the Corps reevaluate impacts to waters of the U.S. resulting from the proposed action, revise the proposed mitigation plans, and reconsider the availability of potential practicable alternatives prior to a determination on the permit application.

NEPA/Section 309 Rating

In accordance with EPA's policies and procedures for reviews under NEPA and Section 309 of the Clean Air Act, EPA has rated the Draft EIS as "Environmental Objections – Insufficient Information" ("EO-2"). The rating is based primarily on our concern that the Draft EIS may not contain sufficient information to fully assess the potential water quality and aquatic resources impacts, and that the preferred alternative may have significant impacts that should be avoided in order to protect the environment. In response to the Corps' request, substantial detail has been provided to support our concerns and recommendations, and is included in the Detailed Comments section of this letter. A description of EPA's EIS rating system is also enclosed.

Thank you for your consideration of our input. We would like to schedule a meeting with the Corps in the next month to continue discussing resolution of the substantive issues raised in this letter. If you have any questions regarding our comments, please call me, or you may contact the following who are the most knowledgeable on this subject and can assist with coordinating a meeting date: Mr. Larry Svoboda, Director of the NEPA Compliance and Review Program at (303) 312-6004, or Mr. Bert Garcia, Director of the Ecosystem Protection Program at (303) 312-6670.

Sincerely,

Carol L. Campbell

Carol L. Campbell
Acting Deputy Regional Administrator

Enclosure

cc: Scott Franklin, Moffat EIS Project Manager, U.S. Army Corps of Engineers
Tim Carey, Denver Regulatory Office Chief, U.S. Army Corps of Engineers

EPA's DETAILED COMMENTS
MOFFAT COLLECTION SYSTEM PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
OCTOBER 2009

USE OF CURRENT VERSUS EXISTING CONDITIONS

The DEIS analysis assessed environmental consequences by comparing impacts of the five action alternatives to existing conditions under the Full Use Existing System scenario, which reflects the operation of Denver Water's presumed system in year 2016 (annual average unrestricted demand of 345,000AF, maximized yield of existing water supplies, other actions/projects). The Corps has quantified the hydrologic changes between current conditions (2006) and existing conditions (2016) and presented a comparison of the hydrologic changes between 2006 and the no action and action alternatives in Appendix H. While the Draft EIS uses the hydrology for existing conditions (2016) as the baseline for the habitat modeling, the Draft EIS does not quantify other changes to the aquatic resources (e.g., invertebrate community parameters) and water quality between current conditions (2006) and existing conditions (2016). Not quantifying potential changes in aquatic resources and water quality that may occur due to additional withdrawals between 2006 and 2016 is a significant omission in the document.

Based upon information presented in Appendix H of the Draft EIS, it is evident that the additional withdrawals from the Moffat Collection System between 2006 and 2016 are significant. Despite the magnitude of these additional withdrawals, there is no analysis in the Draft EIS that characterizes potential changes to the invertebrate/fish assemblages and water quality between 2006 and 2016. Currently, the existing conditions (2016) of invertebrate/fish assemblages and water quality, as presented in Chapter 3, are based upon sampling and analyses prior to 2006. Given the significant changes in operation and increases in water withdrawal between 2006 and 2016, it is inappropriate to assume that 2006 conditions (as presented in Chapter 3) represent existing conditions in 2016.

The Full Use Existing System does not represent an appropriate baseline for impacts analysis, unless the 2016 condition of the aquatic resources (including population and community metrics) and water quality parameters are adequately predicted, and reflect anticipated changes between current conditions (2006) and existing conditions (2016). In the Draft EIS, water quality and aquatic resource baseline data are only provided for current conditions (reflecting operations as they were in 2006). A known and quantifiable baseline should be used to quantify project impacts. Therefore, EPA recommends that the Corps either 1) use the current conditions as a baseline for the impacts analysis, or 2) provide additional analyses that adequately quantify the changes in aquatic resources and water quality parameters consistent with the predicted changes in hydrology reflected in the 2016 scenario.

SURFACE WATER

Water Quality

EPA is concerned about the use of a 15% change as the benchmark in the Draft EIS for significance of impact for water quality. On page 4-25, the Draft EIS states "According to CDPHE guidance documents, in general, if a new or increased concentration is less than 15% of the standard concentration less the existing concentration, there is no significant change (CDPHE 2001)." Essentially this means that if a change in concentration of a pollutant (or load) will consume 15% of the available assimilative capacity in a system for that pollutant, that change is considered significant by CDPHE. First, in order to utilize this approach, there would need to be a determination of the assimilative capacity of the waterbodies for pollutants that could be affected by the action alternatives. The available assimilative capacity is determined by the amount of loading from both point and nonpoint sources in the watershed compared with the allowable loading under the water quality standards. A loading analysis and determination of assimilative capacity was not accomplished for the waterbodies of interest in the Draft EIS. Instead, the Draft EIS assumes that flow changes less than 15% are essentially not significant and changes in permitted discharges that are less than 15% of the current stream-to-effluent ratio are not significant. If a waterbody is close to its assimilative capacity for a pollutant under current conditions, a small change in flow or relative increase in discharge from a point source could result in a water quality exceedance. Evaluation of solely effluent limits and discharge volumes to determine loading into a system underestimates the overall load (by excluding nonpoint source contributions) to the system and overestimates the available assimilative capacity. Hence, the use of the 15% benchmark without the understanding of assimilative capacity appears arbitrary and does not ensure an accurate analysis of significance of impact. Any change in water quality that would result in a waterbody exceeding a water quality standard (including a temperature standard or a narrative standard) is significant and will result in a 303(d) listing, TMDL analysis, and possible implementation of point and nonpoint source controls. This should be clearly explained in the Draft EIS.

Regarding nutrients, there are currently no numeric water quality criteria for phosphorus for the waterbodies of interest to this project (excluding those waterbodies for which nutrients are controlled via a Control Regulation). However, Colorado's narrative standard applies. Because there are not numeric criteria for phosphorus, effluent limits for phosphorus have not been established for the majority of permitted dischargers in waterbodies affected by this project, and there has not been a low flow analysis performed for this pollutant. Currently, there are concerns that nutrient impacts are emerging in the Tri-Lakes area. This area currently may be at or exceeding its assimilative capacity for nutrients. Decreases in stream flow and increases in stream temperature could exacerbate the effects of nutrients in this system.

Expected changes in nutrient flux and assimilative capacity should be explicitly discussed in order for the Draft EIS water quality evaluation to be complete and thorough. As the waterbodies in the effected areas become more and more effluent dominated, it is likely that nutrient issues will begin to emerge both directly in the receiving waters and in the downstream waters. The EIS analysis should include an evaluation of nutrient impacts and the likelihood of the

alternatives resulting in the need for point source and nonpoint source controls for phosphorus as a result of loss of assimilative capacity.

Another concern is related to waterbody impairments. The table below provides a summary of the segments on CDPHE's draft 2010 303(d) report that have monitoring and evaluation (M&E) and impairment listings in the watersheds that may be impacted by the action alternatives. As stated earlier, of greatest concern are the newly identified temperature impairments in Ranch Creek, the Fraser River, and the Upper Colorado segments below the confluence with the Fraser. Water withdrawals in this area will likely contribute to these temperature impairments and this impact should be analyzed and disclosed in the Draft EIS. In addition, the Fraser River contributes water to the Tri-Lakes (Lake Granby, Shadow Mountain Reservoir, and Grand Lake) via the Windy Gap diversion. Nutrient issues in the Tri-Lakes are arising as noted in the dissolved oxygen impairment listing for Shadow Mountain Reservoir. Reduction in assimilative capacity (dilution capacity) in the Fraser above Windy Gap will increase the relative quantity of wastewater treatment plant effluent and nutrients being carried in the Fraser. Therefore, water diversions carrying Fraser water through Windy Gap will likely have a higher nutrient content as a result and may cause or contribute to nutrient impacts in the Tri-Lakes.

In addition to the temperature impairments, dissolved oxygen impairments, and nutrient impairments that are likely to occur, selenium impairments may be exacerbated with possible impacts on endangered species. These impairments will likely result in the need for TMDL development and evaluation of pollutant source controls and may impact permitted dischargers in the watersheds.

Table I: Draft 2010 303(d) Listings in the Watersheds of Interest

WBID	Segment Description	Portion	Colorado's Monitoring & Evaluation Parameter(s)	Clean Water Act Section 303(d) Impairment
COLCLC01	Colorado River, Roaring Fork River to Rifle Creek	all	sediment	
COLCLC02a	Colorado River, Rifle Creek to Rapid Creek	all	sediment	
COLCLC02b	Colorado River, Rapid Creek to Gunnison River	all	sediment, Se	
COLCLC03	Colorado River, Gunnison River to state line	all		Se

WBID	Segment Description	Portion	Colorado's Monitoring & Evaluation Parameter(s)	Clean Water Act Section 303(d) Impairment
COUCUC03	Mainstem of the Colorado River from Lake Granby to the Roaring Fork River.	From 578 Road Bridge to just above the confluence with the Blue River		Temperature
COUCUC04	Tributaries to the Colorado River from Lake Granby to the Roaring Fork River which are on National Forest lands.	Ranch Creek		Temperature
COUCUC10c	Mainstem of the Fraser River from Hammond Ditch to the confluence with the Colorado River.	all		Temperature
COUCUC10c	Mainstem of the Fraser River, from the Hammond Ditch to the confluence with the Colorado River	From the Town of Fraser to the confluence with the Colorado River.	Cu	
COUCUC12	Lakes and Reservoirs within Arapahoe National Recreation Area including Grand Lake, Shadow Mountain Lake and Lake Granby	Shadow Mountain Lake		D.O.
COUCUC12	Lakes and Reservoirs within Arapahoe National Recreation Area including Grand Lake, Shadow Mountain Lake and Lake Granby	Lake Granby		Aquatic Life Use (Hg FCA)
COSPBO09	Mainstem of Boulder Creek, from South Boulder Creek to Coal Creek	all	Aquatic Life, Cd, As	
COSPBO10	Boulder Creek, Coal Creek to St. Vrain Creek	all	Aquatic Life, Cd	*E. coli*
COSPLS01	Mainstem of the South Platte from the Weld/Morgan County line to the Colorado/Nebraska border.	all	Aquatic Life Use	Se, Mn

WBID	Segment Description	Portion	Colorado's Monitoring & Evaluation Parameter(s)	Clean Water Act Section 303(d) Impairment
COSPMS01a	South Platte River from Big Dry Creek to St. Vrain Creek	all		*E.coli*
COSPMS01b	South Platte River from St. Vrain Creek to Weld/Morgan County Line	all		Se
COSPMS04	Barr Lake and Milton Reservoir	all		pH, NH_3
COSPMS04	Barr Lake and Milton Reservoir	Barr Lake	D.O.	
COSPMS04	Barr Lake and Milton Reservoir	Milton Reservoir		D.O.
COSPUS14	S. Platte River	all		As
COSPUS15	S. Platte River, Burlington Ditch to Big Dry Creek	all		*E. coli*
COSPUS15	S. Platte River, Burlington Ditch to Big Dry Creek	Burlington Ditch to Clear Creek		Cd
COSPUS19	Lakes and reservoirs tributary to the Upper South Platte River from headwaters to Chatfield Reservoir.	Tarryall Reservoir, Cheesman Reservoir, Elevenmile Reservoir, Spinney Mountain Reservoir	D.O.	

A discussion of these impairments should be included in the EIS analysis, with the potential for the no action and action alternatives to contribute to these impairments disclosed. Any change to an upstream segment that influences assimilative capacity for an impaired downstream segment should be considered a significant impact. Hence, downstream impairments should be evaluated and discussed as well as those identified for the affected segments.

Another area of concern is that the Draft EIS does not address potential organism transfers that may result from the no action and action alternatives. The document should discuss whether or not there is potential for nonnative and native species transfer or exacerbation of current

conditions between watersheds. The document should also examine whether or not this has occurred as a result of past diversion activities.

Finally, in the water quality assessment, the Draft EIS applies the 85th percentile of data to compare to the water quality metals standards to determine support of aquatic life beneficial use. Additionally, a hardness value is selected for the waterbodies to calculate the hardness dependent standards when applicable. The document should include an explanation as to the selection of hardness values for calculation of the Table Value Standard (TVS) for each waterbody evaluated, an analysis of attainment against chronic standards using the 85th percentile data (or as required for the chronic standard), and an evaluation of attainment of acute standards using the maximum values and paired hardness values. The Draft EIS needs to make the comparison to standards clearer using the correct portion of the data set. Currently, the document does not provide a determination of attainment of acute standards. It is possible for a waterbody to be in attainment of chronic standards at the 85th percentile of the data and still exceed the acute standard more than the allowable once in three year frequency.

Stream Morphology

EPA is concerned that the proposed action will affect numerous riffle and pool complexes which are special aquatic sites (40 CFR § 230.45), both through direct inundation from reservoir expansion and additional dewatering of streams in the Fraser and Williams Fork Basins. Expansion of Gross Reservoir will eliminate riffle and pool complexes in South Boulder Creek, Forsythe Gulch, Winiger Gulch and its tributary, and the unnamed southern tributary to Gross Reservoir. Previous research has shown that streams with cumulative diversion magnitude of 90% and greater have significant shifts in riffle/pool ratios, with increases in pool habitat[1]. EPA is concerned that the proposed action, in combination with past, present and projected future withdrawals, may lead to cumulative diversion magnitudes greater than 90% and contribute to significant degradation of special aquatic sites in West Slope streams. According to the Guidelines, activities which affect riffle/pool ratios may reduce the aeration and filtration capabilities of these complexes, may reduce stream habitat diversity and may retard aquatic species repopulation of waters through sedimentation and the creation of unsuitable habitat (40 CFR § 230.45(b)).

GROUNDWATER

Conceptual Model

EPA appreciates the consideration of and response to our previously submitted groundwater comments, and we agree that the conceptual hydrologic model for the Fraser watershed demonstrates that there is no change in recharge above the diversions and in the northwest part of the watershed. However, below the diversions, there may be impacts to

[1] Albano, C.M. (2006) Structural *and Functional Responses of Aquatic Macroinvertebrate Communities to Streamflow Diversion in Rocky Mountain Streams.* Masters Thesis, Colorado State University, Fort Collins, Colorado.

groundwater. Specifically, removal of water from the Fraser River and its tributaries may impact groundwater levels, public and private wells, and wetlands, and those impacts should be evaluated.

The conceptual model presented in the Draft EIS suggests that in the Fraser River and along the narrow alluvial channels of the tributaries to the Fraser River there is no interaction between the streams/river and alluvium or between alluvium and bedrock, and that the ground water is always recharging surface water, and thus impacts to groundwater will be minimal. However, the model does not accurately represent the interplay between groundwater and surface water in a watershed because it does not recognize the fact that there will be areas where surface water is recharging groundwater, at least during portions of the year. Therefore the removal of surface water may impact ground water levels. The Apodaca and Bails paper[2] cited in the Draft EIS Groundwater Section 4.2 illustrates ground water recharging the tributaries. However, the study provides only a very generalized map with 100-foot contour lines, very few data points, and was completed in the fall timeframe when it is expected that groundwater will recharge surface water. There will be locations along the tributaries and the main stem where surface water is recharging groundwater, particularly during high flow months. The Grand Environmental Services Report[3] shows direct connection between alluvial groundwater/wetlands and the Fraser River.

Impact on Water Levels in Wells

The potential for impacts to wells (public water supplies and domestic wells) has not been addressed in the Draft EIS. EPA recommends that information regarding well locations, screened interval, depth, geology, and water levels for private and public wells be disclosed, and an impacts analysis based on this information be performed. For example, an estimate of potential future impacts could be derived from an analysis of groundwater levels before diversions and over time until present. Any analysis performed should also include an evaluation of groundwater quality. On page 4-207, the Draft EIS states: "sewage effluent may impact ground water well users," but "natural attenuation" will address this potential impact. Because the proposed project will result in less flow to dilute contaminants from sewage effluent and septic tanks in surface water and groundwater, such a conclusion should be quantitatively substantiated. It is recommended that the proponent include ongoing monitoring of water levels and water quality in select monitoring wells and appropriate mitigation if well users or wetlands are impacted by the diversion.

---

[2] Apodaca, L.E. and J.B. Bails. 1999. Fraser River Watershed, Colorado – Assessment of Available Water-Quantity and Water-Quality Data Through Water Year 1997, USGS WRIR 98-4255.

[3] Grand Environmental Services, 2008. Final Baseline Hydrology Report for Compensatory Wetland Mitigation Plan, Town of Winter Park Shops Expansion Project, USACE SPK-2008-752.

AQUATIC BIOLOGICAL RESOURCES

Direct and Indirect Impacts

Characterization of Impact Intensity: The Draft EIS needs to clearly elaborate on criteria used to categorize impacts and apply these criteria consistently throughout the document. Based on EPA's review, the Draft EIS does not contain a scientifically based assessment of impact thresholds to define the categories of impact intensity, as Appendix K indicates has been done. The inconsistencies within the document are misleading and confusing for reviewers and further lead to the potential for project impacts to not be objectively disclosed.

The Draft EIS states that "impacts on benthic invertebrate community parameters were evaluated based on the available hydrology, geomorphology, and water quality information" (ARTR page 16). No additional information was provided as to how the hydrology, geomorphology and water quality data were used to determine impacts to aquatic invertebrates, or how the thresholds for impact categories were defined. Also, the document only presents data on current conditions (2006) of invertebrate density and number of taxa, and fails to elucidate changes in these metrics under existing conditions (2016) or with future expected and proposed actions. Only a qualitative discussion is presented in Chapter 4 of the Draft EIS to support the intensity of impact for each waterbody and alternative. For aquatic invertebrates, as well as all other aquatic resources, EPA requests that the methodology and results of any analyses on changes in aquatic resources be provided in the document along with clearly defined 'thresholds' for each impact category.

The disclosed level of project impacts varies between sections of the Draft EIS, which indicates that a consistent interpretation of impact intensity was not applied throughout the Draft EIS. For example, the Draft EIS states that,

> *"Moffat Project alternatives would have **none to negligible impacts to fish, benthic invertebrates, and their habitats for most stream segments**. Exceptions include minor adverse impacts to fish and invertebrates in South Boulder Creek upstream of Gross Reservoir, and the North Fork South Platte River which could experience increased flows and increased concentrations of copper"* (Draft EIS pages 5-46, 5-47, emphasis added).

This is contrary to the information presented in Draft EIS Section 4.9, which states that there would be **minor adverse impacts** associated with the project for all stream segments except St. Louis Creek, Vasquez Creek, the Englewood diversions, and several segments of the Fraser River. For another example, the Draft EIS states that,

> *"Cumulative impacts to aquatic resources would be **negligible**, except for **minor adverse impacts** to fish and invertebrates in the North Fork Ranch Creek (tributary of the Fraser River), McQueary, Jones, Bobtail, and Steelman creeks (tributaries of the Williams Fork River)"* (Draft EIS page 5-47, emphasis added).

It then states,

> *"Most streams would experience **minor** effects to fish and aquatic resources. Exceptions to this include some of the upper tributaries of both the Williams Fork and the Fraser rivers where **moderate impacts** to fish could be expected due to lower flows"* (Draft EIS page 5-56, emphasis added).

Characterizing impacts in the context of total diversion magnitude: Current baseline conditions of the system have not been appropriately characterized in the DEIS, as they do not consider how past diversions and flow management have affected water quality and aquatic life to date. Also, non-linear changes may occur at higher magnitudes of total diversion, where an incremental increase in diversion magnitude may not lead to incremental changes in the aquatic community, but instead may lead to disproportionate adverse changes. EPA requests that the Corps include expanded analyses to include information on deviation from natural, or virgin, flows in order to characterize how the current magnitude of flow diversion in the Moffat Collection System affects aquatic life and water quality and any potential non-linear changes in the aquatic ecosystem.

Currently, the Draft EIS presents information on the change in flows between current conditions and full use existing conditions, and the change in flows between full use existing conditions and the no action and action alternatives. The disclosure of the current magnitude of flow diversion, compared with natural flows is not included in the Draft EIS (e.g., what percent of monthly virgin flows are currently diverted), but it should be included as it is relevant to understanding the current baseline conditions and potential impacts of the proposed action on aquatic communities. As Denver Water Board diversions have existed on West Slope streams for decades and have modified the aquatic ecosystem significantly, information on natural flows is necessary to characterize the current baseline status of aquatic organisms and their habitat under the human-modified current and existing conditions. EPA requests that the monthly natural flows and the difference between the natural flows and current /existing conditions (e.g., percentage of monthly natural flows diverted under current and existing conditions) be presented for each diversion site or PACSIM modeling node so that a scientifically based baseline is disclosed.

The baseline aquatic life and water quality conditions have not been appropriately characterized. For example, in Chapter 3, the document uses research to indicate that the effects of flow diversion on aquatic organisms in the Fraser River Basin and analogous systems can have varying effects and that the communities in these streams can be very tolerant to flow removal (Draft EIS page 3-223). What the discussion fails to capture is that the referenced studies showed statistically significant differences between diverted streams and their free-flowing reference sites, indicating that these aquatic communities are currently impacted by flow diversions. Additionally, Chapter 3 presents data collected below diversions prior to 2006, but does not provide any analysis or discussion as to how these data may be indicative of degraded conditions. For example, the DEIS presents data on native fish, which were present several of the Fraser tributaries in 1993 sampling events, but not in any subsequent events, yet provides no discussion as to why that may be the case. Also, the Draft EIS states that many of the same benthic invertebrate groups present in 2007 were also present in 1985 (page 3-221), but provides no discussion as to whether the invertebrate taxa that are no longer present are indicative of altered habitat conditions. EPA requests that future NEPA documentation provide discussion and analysis to illustrate how past diversions have affected aquatic resources to date. When the impacts of this project are analyzed in combination with past and reasonably foreseeable actions, it is likely that the degradation to the aquatic ecosystem will reach a level that is likely to be significant (per 40 CFR § 230.24).

The Guidelines highlight the need to assess 'Normal water fluctuations in a natural aquatic system' as part of the factual evaluations to determine whether a project causes or contributes to significant degradation of waters of the U.S. (40 CFR § 230.24). As stated in the Guidelines, altering the normal water-level fluctuation pattern of an area, resulting in prolonged periods of inundation, exaggerated extremes of high and low water, or a static non-fluctuating water level, can alter or destroy communities and populations of aquatic animals and vegetation, induce populations of nuisance organisms, modify habitat, reduce food supplies, restrict movement of aquatic fauna, destroy spawning areas, and change adjacent, upstream, and downstream areas. In the Draft EIS, information on natural flows, and the current deviation from natural, is not presented and thus, the relevant flow data to characterize the current/existing baselines and quantify impacts is absent.

Characterizing impacts in the context of total diversion magnitude will provide relevant information to assess potential threshold, or non-linear, impacts. The current ecological research suggests that the invertebrate response, and changes in habitat and water quality, can be variable depending on the magnitude of diversion[4]. For example, Rader and Belish[5] found that where flow was diverted 25% of natural, there was an increase in invertebrate density, but where flows were diverted more than 90%, there were significant declines in density and species richness. Cowx et al.[6] found that with a 60% flow reduction, there was an increase in temperature and decreases in wetted width and invertebrate density. Based upon numerous studies that show a suite of environmental and community responses following varying magnitudes of flow depletion, it is likely that at levels of flow reduction greater than 50%, the ecological response to additional incremental water withdrawal may not be linear. In other words, at diversions of this magnitude and greater, the incremental increase in diversion magnitude may not lead to incremental changes in the aquatic community, but instead may lead to disproportionate adverse changes. For example, an additional diversion of 10% between existing conditions and the proposed project may have a 'minor' impact, based upon the analyses currently employed in the Draft EIS. However, if the system is already diverted by 85%, that additional 10% diversion may lead to significant changes in the aquatic resources in the stream – and an impact that may no longer be considered 'minor.'

Based upon the available literature, a coarse framework could be developed to characterize the risk for potential non-linear responses. As the scientific literature points to potential disproportionate impacts beyond certain magnitudes of diversion, information on the current deviation from natural conditions is necessary to potentially characterize potential threshold impacts associated with the project alternatives. EPA has already conducted a cursory literature review on the ecological changes associated with varying magnitudes of flow diversion

---

[4] Dewson, Z.S., A.B.W. James, and R.G. Death. 2007. A review of the consequences of decreased flow for instream habitat and macroinvertebrates. *Journal of the North American Benthological Society,* 26: 401-415.

[5] Rader, R.B. and T.A. Belish. 1999. Influence of mild to severe flow alterations on invertebrates in three mountain streams. *Regulated Rivers: Research and Management,* 15: 686-363.

[6] Cowx, I.G., W.O. Young, and J.M. Hellawell. 1984. The influence of drought on the fish and invertebrate populations of an upland stream in Wales (UK). *Freshwater Biology* 14(2): 165-178.

and would like to work with the Corps to develop a framework for assessing potential non-linear responses. For example, if under existing conditions, the flow reduction is 25% of virgin flows, and the proposed action increases the diversion to 35%, the project impact may be negligible; however if under existing conditions, the flow reduction is 85%, and the proposed action increases the diversion to >90% flow reduction, the project impact may be major.

Appropriate methodologies for determining impacts of flow diversion on West Slope streams: EPA has concerns about the methodologies provided in the Draft EIS to assess impacts to aquatic resources. The analysis does not fully address anticipated changes in invertebrate community parameters and should be expanded to include additional community metrics. Also, EPA is concerned that the analysis of instream habitat is based solely on measures of minimum habitat availability and requests that the Corps expand the analysis to include other habitat characteristics, including heterogeneity and quality, and incorporate a risk-based approach or an effective habitat time series analysis to assess time series changes in populations. These comments are consistent with our concerns outlined in EPA's comment letter for the Agency Review Draft dated January 31, 2009. Each of these concerns and requests is outlined in greater detail below.

1) Appropriate metrics for analysis: In the Draft EIS, the only community parameters used were species richness and density. EPA is concerned that these metrics alone may not be appropriate to characterize the impacts of flow diversion associated with the proposed action. EPA requests that the Corps expand the analysis to include additional community metrics that address changes in the functional composition of species assemblages. These analyses should include, at a minimum, a characterization of community metrics, including dominance, evenness and % Ephemeroptera, Plecoptera and Trichoptera (EPT) taxa. The analysis should also include a discussion of the potential impacts on aquatic organisms of extended dry years, including potential changes in aquatic communities, populations, life history traits and survival. These additional analyses should not require any additional data collection, just re-analysis of existing data.

Species richness values reflect the total number of taxa present, but this metric is not effective in capturing potential changes in community composition due to an altered flow regime. For example, the total number of taxa may not change significantly following flow diversion, but types of invertebrate and fish taxa may shift to species less tolerant of the natural flow regime that have *not* adapted to survive in systems with high magnitude spring peak flows. Research has shown that reduced flows affects community composition, where species adapted to the natural flow regime may be displaced by other dominant, generalist species that are less tolerant to seasonally high flows[4,7]. In the absence of a diverse native fish community in these streams, the functional composition of invertebrates is an important indicator of ecosystem change and the ability of the system to maintain healthy aquatic life. As such, additional emphasis should be placed on quantifying potential impacts to invertebrate community parameters.

---

[7] Poff, N.L., J.D. Allan, M.B. Bain, J.R. Karr, K.L. Prestegaard, B.D. Richter, R E. Sparks, and J.C. Stromberg. 1997. The Natural Flow Regime: A Paradigm for River Conservation and Restoration. *BioScience* 47(11): 769-784.

In the literature, the response of density metrics to flow diversion has been variable, in part due to changes in community composition, the severity of flow reduction, reductions in habitat area, and the magnitude of change to habitat suitability[4]. For example, density may not change with reductions in flow, but the overall habitat area is reduced which means that organisms become concentrated in a smaller area. Therefore, the overall abundance of organisms, and consequent ecosystem productivity, in the affected stream segments may potentially decline, despite a lack of change in density metrics. Because of the confounding factors associated with flow diversion and density metrics, EPA requests that future NEPA documentation use the community metrics proposed above to characterize impacts in addition to density.

2) Instream Habitat analyses: EPA is concerned that impacts to aquatic resources are based mainly upon a measure of "minimum habitat availability." The quantitative model called Instream Flow Incremental Methodology (IFIM) was used to assess habitat availability for fish at different flows. This methodology is used to determine whether the weighted usable area (in square feet) is suitable over a distinct segment of stream, and assess whether minimum habitat availability is impacted by the proposed action and other alternatives. While this methodology is useful to reveal when conditions become unsuitable for various species or life stages, it fails to assess whether all necessary habitat parameters are present for survival, including habitat for prey, connectivity to refugia, suitable water quality, and food web relationships. A risk-based analysis of flows, water quality and habitat changes would be more appropriate to characterize project impacts than IFIM alone. In a risk-based approach, a range of possible outcomes could be modeled by assessing the interaction of multiple factors on fish communities.

The results from this IFIM methodology suggest that reducing the spring snowmelt peak flows is beneficial to aquatic communities in segments of Vasquez Creek and the Fraser River, stating that lower runoff would tend to provide increased habitat availability in average and wet years. The scientific literature has consistently shown that the role of floods and spring snowmelt peak flows in long-term maintenance of instream habitat, aquatic insect diversity, native fish species and ecosystem productivity is much more critical to fish and invertebrate communities than the short-term negative effects on their habitat. In the Fraser Basin, research has shown that moderate flow events, occurring in an unaltered flow regime approximately every 5-10 year, have been shown to be critical in maintaining stream morphology in diverted sub-alpine streams[8]. Therefore, the preservation of peak flows in spring runoff periods is critical to habitat maintenance, and thus the Draft EIS needs to characterize potential impacts to aquatic resources associated with a reduced magnitude and/or frequency of spring snowmelt peak flows, including potential changes to riffle-pool complexes or habitat availability associated with vegetation encroachment. Additionally, if there are long-term changes in flow regime, compared with the flow regime when data were collected for the IFIM studies, due to decreases in magnitude or duration of peak flows, the habitat information may no longer apply. Alone, this methodology is insufficient to characterize the impacts of this project, and should be used in combination with a

---

[8] Ryan, S. 1997. Morphologic Response of Subalpine Streams to Transbasin Flow Diversion. *Journal of the American Water Resources Association*, 33: 839-854.

risk-based approach as described in the previous paragraph or expanded to include an effective habitat time series analysis to assess time series changes in populations.

Technical concerns: The Aquatic Resources Technical Report presents habitat information for all stream segments in the Fraser River basin and characterizes each stream as "mildly" or "severely" diverted. The report does not provide the reader with definitions of "mild" and "severe" diversions in relation to stream flows, and instead arbitrarily bases the definition on aquatic community response. For example, despite the fact that there are no bypass flows on Middle Fork Ranch Creek, the report states "this stream appears to be a "mildly" diverted stream due to the presence of a diverse invertebrate population" (ARTR page 41). Similar statements were made for West Elk Creek, Jim Creek, and Meadow Creek. The fact that the invertebrate populations are diverse may arguably be dependent upon the stream flows, but the magnitude of streamflow diversion is certainly not dependent on the invertebrate community that stream supports. The severity of diversion should be defined based upon stream flow (e.g., streams without bypass flows are "severely" diverted) and the document should be edited to reflect this.

Cumulative Impacts

Additional information on past diversions would substantially improve the cumulative impacts analysis and provide insights on the current baseline that the current analysis lacks. The current conditions reflect a severely altered system, as significant past and present water withdrawals already adversely impact the aquatic community. Any additional impacts, either between 2006 and 2016 or following implementation of the proposed project, could lead to significant changes to the aquatic resources and water quality of the Fraser River Basin. Because the system is already substantially altered, additional diversions, whether "minor" or more substantial, will likely cause or contribute to significant degradation and could potentially lead to non-linear changes in the ecological system, per 40 CFR § 230.10(c). As stated above, the scientific literature points to potential disproportionate impacts beyond certain magnitudes of diversion, suggesting that at greater percentages of diversion, the ecological response to additional incremental water withdrawal may no longer be linear. Therefore, an understanding of the disparity between the current baseline conditions and the natural conditions can aid in assessing the overall degradation of the system. Disclosure of natural flows is necessary to characterize the cumulative impacts of diversions in the basin, per 40 CFR § 230.24.

The Draft EIS has limited discussion on climate change and generally dismisses influences as too uncertain due to a variety of potential impact outcomes. However, potential reductions and/or temporal changes in natural runoff and flow have been identified in various research documents as potential effects from climate change. Therefore, it is reasonable to consider this degree of uncertainty in operational design and analysis of this project, and a model should be developed that analyzes a scenario where flows are reduced substantially as a result of climate change. At a minimum, the Draft EIS should include consideration of potential climate change influences on hydrology being described in the Colorado Water Conservation Board's "Colorado River Water Availability Study" (to be available for public review in March 2010). Estimates of potential incremental changes in hydrology due to climate change influences should be included in the cumulative impacts analysis and mitigation design.

MITIGATION AND MONITORING

The impacts of greatest concern include the potential adverse changes to the aquatic ecosystem following the inundation of an expanded Gross Reservoir on its perennial tributaries and the impacts to aquatic ecosystems resulting from diversion of additional flows and other changes in flow management in the Williams Fork, Fraser, Colorado, Blue and North Fork South Platte River Basins. The Draft EIS states: "For all action alternatives, additional Denver Water diversions would occur in average and wet years and would be highly concentrated during the runoff months in May, June, and July" (Draft EIS page ES-16). It is important to note that the majority of streams with Denver Water Board diversions will have additional diversions other times of the year, including winter, as part of this project. EPA is concerned that the current baseline conditions and impacts associated with this project have not been adequately assessed, disclosed or mitigated. The proposed mitigation of impacts in Appendix M of the Draft EIS does not adequately compensate for the impacts associated with this project. As stated above, the impacts analysis used to determine indirect (secondary) and cumulative impacts to water quality and aquatic resources is insufficient, should be substantially revised, and the revised conclusions need to be disclosed and used to determine the appropriate scope of mitigation. Without an adequate characterization of impacts associated with the proposed action, it is not possible to propose an appropriate level of mitigation to offset impacts.

According to 40 CFR § 1508.2, mitigation is an essential tool for agencies to use to avoid, minimize, rectify, reduce, or compensate for any adverse environmental impacts associated with their actions. Through the NEPA process, adequate mitigation measures should be transparent and consider future environmental impacts so that monitoring activities are designed and implemented to measure effectiveness. NEPA requires agencies to "study, develop, and describe appropriate alternatives to recommend courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." (42 USC § 4332(2)(E)). Concerns regarding environmental impacts and the lack of adequate mitigation are described below.

Pursuant to 33 CFR § 332.4 and 40 CFR § 230.94, *Compensatory Mitigation for Losses of Aquatic Resources*, a compensatory mitigation plan must be submitted and approved by the Corps before the District Engineer can issue an Individual CWA Section 404 permit. In accordance with the Guidelines, a permittable project must not cause or contribute to significant degradation, either individually or cumulatively, of the biological, physical and chemical characteristics of the aquatic ecosystem, special aquatic sites (e.g., riffle and pool complexes) and human use characteristics (e.g., recreational and commercial fisheries, water-related recreation and aesthetics). When the impacts of this project are analyzed in combination with past and reasonably foreseeable actions, the degradation to the aquatic ecosystem in the Williams Fork, Fraser and Colorado River Basins may reach a level that is likely to be significant. Any project that contributes to this significant degradation, even if the contribution is 'minor' as stated in the Draft EIS, requires compensatory mitigation in order to reduce those impacts below a level of significance, or is not in compliance with Part 230.10(c) of the Guidelines. There are available mitigation opportunities that may offset the significance of the impacts and minimize the project's contribution to significant degradation in the Fraser, Williams Fork and Colorado River

Basins.

EPA is particularly concerned with the lack of mitigation for impacts to diverted streams. While the Draft EIS has concluded that impacts to stream resources associated with this proposed action range from none to minor impacts, it should be noted that the 'minor' impacts span over 90 miles of stream in the Williams Fork and Fraser River Basins. Mitigation should be proposed for aquatic life and habitat losses from diverted streams in these basins, as 'minor' secondary impacts aggregated over 90 miles of stream and adversely affecting an entire watershed, are not, when considered together, trivial impacts. Even 'minor' impacts to over 90 miles of stream can be considered significant, and as such, appropriate mitigation should be proposed to fully compensate for these yet-to-be-determined unavoidable impacts on a broad scale so the project does not cause or contribute to significant degradation of aquatic resources.

In-kind mitigation measures may include improving flows to the upper Colorado, Williams Fork and Fraser Rivers by providing bypass flows through diversions on multiple tributary streams. Bypass flows maintain aquatic habitat connectivity within the stream, allowing for carbon export and recolonization of dewatered segments by upstream invertebrate colonists, and have been shown to mitigate some of the severe impacts associated with complete dewatering[9]. Because mitigation for habitat losses, including bypass flows on low order tributaries of the Fraser and Williams Fork basins, can have cumulative beneficial effects on downstream waters, they provide opportunities to offset the significance of the stream impacts (which are considered difficult to replace) and help minimize the project's contribution to significant degradation in the Fraser, Williams Fork and Colorado River Basins. Additional opportunities for mitigation may include implementing options discussed in the Grand County Stream Management Plan, a 'virtual' Shoshone call or acquisition of other senior water rights for instream flows.

Additional mitigation options to replace the permanently lost riffle and pool complexes upstream of Gross Reservoir may include restoration of dewatered riffle and pool complexes on the West Slope by establishing bypass flows on several tributaries of the Fraser and Williams Fork Rivers. While the Mitigation Rule speaks to the need to use the watershed context to the extent appropriate and practicable, this project represents a unique circumstance, where the location of impacts spans watershed boundaries due to the transbasin diversion of water. The Mitigation Rule was not intended to transfer impacts or mitigation from one watershed to another, but to provide mitigation where project impacts occur. Because of the hydrologic connectivity between basins established by the Moffat Tunnel, and the fact that the project is creating impacts on both the East and West slopes of the Continental Divide, enhancement and restoration opportunities should be explored in both basins. Because aquatic resources in the Fraser and Williams Fork River Basins are heavily impacted by water withdrawals, it is our best professional judgment that the best result for the aquatic ecosystem is to provide mitigation both in the South Boulder Creek Basin and the Fraser and Williams Fork Basins.

---

[9] Pepin, D., N.L. Poff, and J. Baron. 2002. *Ecological Effects of Stream and River Water Development*. In: Rocky Mountain Futures (J. Baron, ed.), Island Press, 113-132.

EPA has several concerns associated with the Additional Environmental Storage proposal at Gross Reservoir (Appendix M). The additional 5,000 AF will raise the dam an additional 6 feet, yet no information is provided in the Draft EIS as to the additional direct impacts associated with the increased reservoir size. Appendix M infers that this information is contained in the *Gross Reservoir Environmental Pool Operations Model* (AMEC, June 14, 2009), however EPA was unable to locate this information in the document. This information needs to be included in the Draft EIS as part of the proposed action in order to assess the Least Environmentally Practicable Alternative (LEDPA) pursuant to the Guidelines and to identify how much additional mitigation may be necessary. Also, the Draft EIS states, "the Additional Environmental Storage would generally be filled from April through September by exchanging water owned by the City of Boulder and Lafayette, rather than by water from the Moffat Collection System, which includes water diverted from the West Slope and water diverted under Denver Water's Gross Reservoir storage right" (Appendix M, p. M18). A 404 Permit Condition should be required to assure that no additional west slope diversions are used to fill the environmental pool, either via exchange or otherwise.

The mitigation proposed for Colorado and Fraser River temperature is inappropriate, as it only addresses August maximum temperatures in relation to concurrent withdrawal. The Draft EIS and subsequent mitigation plan need to consider delayed temperature responses, where removal of spring snowmelt flows can potentially affect late summer temperatures. In systems dominated by a spring snowmelt peak, the peak flows are critical to maintaining temperatures throughout the year. With diversion of spring snowmelt peak flows, there is reduced loading, which reduces groundwater recharge and reduces coldwater saturation of wetlands, reservoirs, alluvium and other areas where flows become temporarily suspended. This in turn leads to an earlier increase in temperatures during the summer, as there are reduced volumes of cold water to buffer the warming from solar radiation. Also, due to potential reductions in groundwater recharge, there is likely a greater overall reduction in flow in later summer, which exacerbates temperature issues, as there is less overall mass to heat.

In order to address the issues we raised in the 'Groundwater' section of this comment letter, EPA recommends monitoring over time of groundwater and surface water at defined locations. Groundwater monitoring should include water levels in wells and groundwater quality, especially given the potential impacts from sewage effluent. If impacts greater than those discussed in the Draft EIS are found, mitigation measures should be implemented. EPA would like to work with the Corps and the applicant to establish a monitoring program and to define potential mitigation measures.

In summary, the following concerns regarding the mitigation plan (Appendix M) are provided for consideration regarding our determination that the proposed mitigation is not adequate to fully compensate for the amount and type of resource impacts associated with the proposed project:

- The plan does not assess additional potential adverse impacts to West Slope streams from additional water withdrawals during the spring snowmelt period and other times of the year associated with the proposed action;
- The plan relies on arbitrary criteria and inadequate methodologies to characterize

potential impacts to aquatic life associated with the proposed action;

- The mitigation plan may not sufficiently address or provide mitigation for adverse impacts to South Boulder Creek, Forsyth Gulch, Winiger Gulch Tributary, Winiger Gulch and an unnamed southern tributary;
- Proposed mitigation on South Boulder Creek, alone, may not be sufficient to replace the riffle and pool complexes and associated functions and values that will be lost with direct impacts to 8,356 linear feet of streams tributary to the reservoir;
- Impacts of a 5,000 AF Additional Environmental Storage pool, including additional loss of riffle and pool complexes from inundation, have not been characterized in the Mitigation Plan or the Draft EIS;
- The mitigation plan does not sufficiently address the potential to violate the state water quality standard for temperature;
- The mitigation plan needs to include a monitoring and adaptive management plan for impacts to water quality, groundwater, stream morphology and aquatic life so that if impacts greater than those discussed in the Draft EIS are found, mitigation measures can be implemented.

ALTERNATIVES ANALYSIS

Adequately defining the project purpose and need statement is critical for developing a broad range of alternatives in the Draft EIS, including subsequent identification of the least environmentally damaging practicable alternative (LEDPA) for compliance with the CWA Section 404(b)(1) Guidelines (Guidelines). EPA recommends the Draft EIS purpose and need statement should be more broadly defined: "to provide a portion of additional water supply for Denver Water's Combined Service Area future needs." For example, the NEPA document for the Denver Water Two Forks Water Supply Impoundment (Two Forks) project had a general purpose and need statement such that a broad range of alternatives was considered: "(t)he purpose of Denver's proposed projects is to provide a dependable future water supply for the metropolitan area."

EPA has determined that the terms "basic" and "overall project purpose" are to be used interchangeably and are not intended to have distinct meaning. See Final Determination of the U.S. Environmental Protection Agency's Assistant Administrator For Water Pursuant to Section 404(c) of the Clean Water Act Concerning the Two Forks Water Supply Impoundments, Jefferson and Douglas Counties, Colorado, November 23, 1990, Page 2, n. 2. It appears that in the current project the Corps continues to define "overall project purpose" and "basic project purpose" to have separate meanings where the overall project purpose is more specific to the applicant's project thereby eliminating potential practicable alternatives. Regardless of the applicant's stated purpose and need in the Draft EIS, an independent determination by the Corps of the basic/overall project purpose is necessary.

In late 2003 and early 2004, EPA reviewed the adequacy of the purpose and need statement for the project. EPA raised significant issues to the Corps during that period including that the applicant's four separate project needs could be considered separate project purposes (i.e., reliability, vulnerability, flexibility, and firm yield). Denver Water's desire to resolve all

four problems with one federal action may have precluded identification of available, less damaging practicable alternatives. EPA's recommendation has been and continues to be that a single, basic project purpose with alternatives addressing that single purpose be defined. Despite our comments detailing the independent nature of these project purposes, the Draft EIS identifies the same four project needs and has also specified the two underlying major issues of timeliness and location as additional considerations in defining and analyzing alternatives, all of which inappropriately limit the alternatives evaluated. If the Corps believes that the separate project purposes (needs) are not independent and are interconnected, then the future NEPA documentation should clearly defend this assertion and provide additional rationale supporting these needs including the potential alternatives that could address those needs and which are standard industry practices for water supply managers.

EPA has concluded that it is an inappropriate interpretation of the Guidelines to integrate underlying project proponent needs into the project purpose and need statement or to use them as screening criteria, as this could result in elimination of alternatives that may otherwise be "practicable" considering the basic/overall project purpose of water supply. In addition, the Draft EIS incorrectly uses the applicant's purpose and need as one of the screening criteria (i.e., PN2: must supply water to Moffat Collection System) when the Section 404(b)(1) Guidelines direct alternatives to be evaluated, along with practicability, based on its ability to fulfill the basic project purpose (i.e., additional water supply for the service area) not the applicant's purpose and need for the project. 40 CFR § 230.10(a)(2).

Denver Water's desire to resolve all four needs with one federal action may have precluded identification of available, less damaging practicable alternatives. Such alternatives may include the more sustainable water supply and storage alternatives presented in the Draft EIS with some modifications, implemented alone, and/or in combination with other water storage alternatives. Additional practicable alternatives may be developed during review of the Draft EIS and before the Final EIS for consideration of compliance with the Section (b)(1) Guidelines.

Our review of the Draft EIS and Appendix K did not find information adequate for the evaluation of alternatives under the Clean Water Act 404 (b)(1) Guidelines. The majority of the problem is due to the inappropriate screening criteria that artificially constrained the range of alternatives that should have been considered. By using an overall purpose statement that includes the applicant's Purpose and Need statement and major issues, the screening criteria is narrowed and eliminates potentially less environmentally damaging and "practicable" alternatives from further examination in the Draft EIS

For example, the Draft EIS' use of timeliness (Screen Criteria PN3) resulted in the elimination of a multitude of alternatives from consideration (Appendix B). While we understand the importance of this issue to the metropolitan area, the Draft EIS also states that Denver Water will seek temporary measures to address shortages including use of the Strategic Water reserve (safety factor) and other near-term strategies until 2030 (Draft EIS page 1-16). A project proponent's decision to pursue a permit should not dictate time frames in which a project is considered because it artificially eliminates alternatives that may otherwise be available to a project proponent applying early in the process. Because these measures are available and

capable of being done, they should be considered when examining alternatives. Such timeliness factors should not render an alternative impracticable and delays are generally not an appropriate basis for screening alternatives.

In addition, the logistics screening criteria LG3 eliminated alternatives that lie within areas known to be integral to the development plans of other entities, including other rationale relating to land status. Alternatives that are "available and capable of being done" may be considered practicable despite zoning designations or platting processes. Given that variances can be sought to change zoning and that land development status is usually not fixed until construction permits are sought, the logistics criterion used in the Draft EIS also likely eliminated alternatives that may still be practicable under the Guidelines.

Finally, the 15,000 AF screening criterion for any new surface impoundment (Screen Criteria LP2) and storage requirement in one storage facility appears to have eliminated multiple storage sites that may be practicable and less damaging when used in combination with the other alternatives. .

Conservation

EPA appreciates Denver Water's commitment to conservation as a means to achieve demand reduction, and we recommend inclusion of additional information regarding this important commitment For example, we suggest identifying the specifics of the conservation efforts (including the obligations defined through the fixed/special contracts and the short-term leases), quantification of the effectiveness of existing programs, and identification of necessary conservation program changes if there is a gap between current effectiveness and the anticipated 16,000 AF per year demand reduction. Disclosure of such information will help inform the public of the actions that will be necessary to meet the 16,000 AF per year demand reduction. We understand from Denver Water's website that such aggressive measures are planned for discussion in the update to the Integrated Resource Plan due for release in 2010. EPA encourages Denver Water to provide the most up-to-date conservation information available from the 2010 report, as well as all other revised information applicable to the Draft EIS.

AIR QUALITY

The Moffat Collection System Project's Gross Reservoir is 18.5 miles from Rocky Mountain National Park and 45 miles from Eagles Nest Wilderness Area, which are both Federal Class I areas. Under the Clean Air Act, Federal Class I areas require special protection of air quality and air quality related values (AQRV's), such as visibility. The project is 11.5 miles from Indian Peaks Wilderness Area a sensitive Class II area. Gross Reservoir is located within the Denver Area ozone nonattainment area and CO and PM10 maintenance areas. Emission estimates presented in the Draft EIS for the project are primarily construction related. The estimates given differ under the various Alternatives, however, in many cases, CO, PM10 and NOx emissions are over 100 tons per year. Statements given in the Draft EIS indicate that the air quality impacts would be minor (pages 4-350 through 4-356) are not supported by any quantitative analysis. These high emission rates coupled with the proximity of Class I areas and

located within the Denver nonattainment/maintenance areas indicate that a near field air impact and a screening level visibility analysis for the project should be included in the EIS.

Sections 3.11.4 and 4.11.3.2 present a General Conformity Analysis for the project. Since the project is in the Denver ozone nonattainment area and Denver carbon monoxide and particulate matter less than 10 microns (PM_{10}) maintenance areas and that the de-minimus thresholds may be exceeded by the project, we concur that a General Conformity analysis and determination should be conducted for the project, and the analysis must include direct and indirect emissions. Section 4.11.8, page 4-358 indicates that CDPHE would determine General Conformity with the State Implementation Plan (SIP). The General Conformity regulation 40 CFR § 93.150(b), states that the "Federal agency must make a determination that a Federal action conforms to the applicable implementation plan in accordance with the requirements of this subpart before the action is taken." The CDPHE is required to review and advise on the Federal agency conformity determination. The EIS should present both the General Conformity Analysis and Determination for the project (i.e., how the proposed action would comply with the SIP and State regulations).

AQUATIC RESOURCES OF NATIONAL IMPORTANCE

Colorado River

EPA has determined that the upper Colorado River is an aquatic resource of national importance (ARNI), consistent with EPA's 404(3)(b) letter to the Corps regarding Windy Gap Firming Project, dated December 24, 2008. The upper Colorado River provides a valuable habitat for many aquatic organisms, including four federally listed fish species. In addition, the upper Colorado River is a valuable commercial and recreational resource, providing economic benefits to Colorado's western slope communities. Segments of the Colorado River downstream of the confluence with the Fraser River are moderate to steep gradient and are characterized by riffle and pool complexes, special aquatic sites under the Guidelines (40 CFR § 230.45). Because wetlands comprise approximately 1-2% of the arid landscape in Colorado and over the last two centuries, Colorado has lost an estimated 50 percent of its wetlands, the riparian wetland complexes, which are also special aquatic sites (40 CFR § 230.41), associated with the upper Colorado River provide a rare and unique habitat.

Fraser River

EPA has determined that the Fraser River is an aquatic resource of national importance (ARNI). EPA is concerned that flow diversion impacts to the tributaries of the Fraser River in combination with flow diversion on the Fraser itself may result in unacceptable adverse impacts to this resource. The Fraser River provides a valuable habitat for many aquatic organisms and offers plenty of opportunity for small to medium size stream fishing. In addition, the Fraser River is a valuable commercial and recreational resource, providing economic benefits to Grand County communities and resorts. Segments of the Fraser River downstream of the Moffat Collection System diversion structure are moderate to steep gradient and are characterized by riffle and pool complexes, special aquatic sites under the Guidelines (40 CFR § 230.45). Because wetlands comprise approximately 1-2% of the arid landscape in Colorado and over the last two centuries, Colorado has lost an estimated 50 percent of its wetlands, the riparian wetland

complexes, which are also special aquatic sites (40 CFR § 230.41), associated with the Fraser River and its tributaries provide a rare and unique habitat.

The Fraser River has a drainage area of 297 mi^2 and ranges from 7,900 ft to above 13,000ft in elevation. The Fraser River is one of the major headwater tributaries to the Colorado River, located on the western slope of the Continental Divide in the Arapahoe National Forest. The Fraser River drains north from the vicinity of Berthoud pass for approximately 40 miles, carrying snowmelt from the Continental Divide to the Colorado River. The Moffat Collection System diverts water from a set of 31 municipal diversion structures on the Fraser River and its tributaries, and moves the water via nearly 28 miles of canals, pipes and siphons to the Moffat Tunnel, which carries the water under the Continental Divide to South Boulder Creek. After the Moffat Collection System began diverting flows (1936-2004), average annual stream flow for the Fraser River at Winter Park gage has decreased by 60% compared with flows prior to the existing Moffat Collection System (1911-1935). The proposed action will utilize current infrastructure to divert additional flows from the Fraser River and its tributaries through the Moffat Tunnel.

All municipal diversions in the Fraser Basin are located approximately 9,500 ft above sea level. Management of these diversion structures is variable from year to year depending on weather, water demands and operational constraints. The collection system operates year-round, diverting water that is physically and legally available at each diversion point subject to minimum bypass flows and calls from downstream senior water rights. Streams that do not have minimum bypass requirements (and even those with downstream senior rights) are fully diverted at times during the year and no water is bypassed from those diversion structures. This leads to low-flow conditions that make riffle habitats absent for up to 2 km downstream. Bypass flows are maintained on ten structures, including the Fraser River, following an agreement between Denver Water and the USFS. At four of these diversions, Denver water is allowed to reduce the USFS minimum bypass flows when its customers are on restrictions. Current instream flow requirements include these bypass flows, as well as numerous instream water rights held by the Colorado Water Conservation Board (CWCB), which are junior to Denver Water's rights. Because they are junior, Denver Water is not obligated to satisfy the CWCB rights.

The Fraser River and its tributaries experience widely variable seasonal fluctuations in flows, with the largest flows resulting from snowmelt. Approximately 75% of the total annual flow occurs during the spring and early summer runoff period of May through mid-July. Peak flows occur for 1-2 weeks in late spring or early summer as warmer air temperatures initiate snowmelt and groundwater aquifers become saturated. During the remainder of the year, groundwater-induced baseflow conditions dominate the hydrograph[9]. Annual precipitation in the basin ranges from approximately 20 in/yr in the lower elevation valleys to 36 in/yr on Berthoud Pass. Riparian vegetation includes subalpine Engelmann spruce (*Picea engelmannii*), subalpine fir (*Abies lasiocarpa*), lodgepole pine (*Pinus contorta*), willows (*Salix* and *Populus* species) and various herbaceous species[8].

The Fraser River downstream of the Moffat diversion is intensively used by the public for recreational activities and represents a valuable commercial and recreational resource. There are numerous access points for fishing, both in the montane and valley sections of the river, and the

summertime economy of many Grand County resorts is linked to river-related activities such as fishing. The river is easily accessible from the Fraser River Trail, a highly utilized multi-use path along the Fraser River through Winter Park and Fraser. There river is used for boating, with a 9 mile stretch of Class III+ to IV rapids through Fraser Canyon. Boating is limited by the diversions upstream, and the Fraser Canyon is only accessible to recreational boaters during several weeks of high runoff flows in the spring.